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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/464,311	12/15/1999	QIMENG CHEN	10991149-1	7356

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EXAMINER

ROBINSON BOYCE, AKIBA K

ART UNIT	PAPER NUMBER
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3623

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/464,311

Applicant(s)

CHEN ET AL.

Examiner

Akiba K Robinson-Boyce

Art Unit

3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-7,9-11 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-11 and 16-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Status of Claims***

1. Due to communications filed 1/10/03, this application is now under CPA (Request For A Continued Prosecution Application) status. The following is a non-final office action. Claims 2, 8, and 12-15 have been cancelled. Claims 1, 9, 11, and 16 have been amended. Claims 1, 3-7, 9-11 and 16-20 are pending in this application and have been examined on the merits.

### ***Continued Prosecution Application***

2. The request filed on 1/10/03 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/464311 is acceptable and a CPA has been established. An action on the CPA follows.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-7, 9-11, 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murad et al (US 6,526,389), and further in view of McDonough et al (US 6,115,693).

As per claim 1, Murad et al discloses:

Processing circuitry operative to process customer telephone call records, (Col. 3, lines 25-32, represented by the programmable controller);

A data warehouse coupled with the processing circuitry and configured to store the processed customer telephone call records, (Col. 4, lines 18-19, represented by the memory);

At least one computer program, performed by the profiling engine, and operative to define behavior profiles, using data from the telephone call records, as data cubes and derive similarity measures on patterns extracted from the behavior profiles, (Col. 8, lines 61-65, Col. 10, lines 24-36, represented by the method being computer implemented, and where the behavior profiles are represented by prototypical first behavior profiles and similarity measures are represented by matches and differences);

Murad et al fails to disclose the following, however McDonough et al discloses:

An On Line Analytical Processing (OLAP) based scalable profiling engine communicating with the data warehouse and operative to build and up data customer behavior profiles by mining the customer telephone call records that flow into the data warehouse, (Col. 11, lines 29-34 and Col. 12, lines 50-53, where the statistics represent the customer profiles).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to incorporate OLAP into the Murad et al patent with the motivation of accurately analyzing trends in a telecommunications environment.

As per claim 3, Murad et al fails to disclose the following, however McDonough et al discloses:

Wherein the profiling engine comprises a commercial data warehouse server, (Col. 7, lines 47-51, represented by the statistics server);

The following is obvious with McDonough since McDonough teaches that an OLAP tool is used to analyze trends and statistics for operational management of the environment (See Col. 11, lines 29-33). In this type of situation, an OLAP server is necessary to provide the services of accessing the proper trend files and routing these trend files to other computers in the network for analysis. Without the OLAP server, the OLAP tool would have no way of keeping the trend files in order for proper analysis:

and a multi-dimensional OLAP server;

As per claim 4, Murad et al discloses:

Wherein the profiling engine implements multi-level, multi-dimensional pattern analysis and comparison, (Col. 9, lines 6-15 w/lines 39-44, where each dimension of the multi-dimensional probability distribution has a corresponding cumulative distribution and where the analysis and comparison is represented by weighted summing of the squared differences between the cumulative distribution of the first behavior profile and each remaining first behavior profile at each attribute)

As per claim 5, Murad et al discloses:

Wherein the behavior profiles are defined at least in part by probability distributions, (Col. 9, lines 6-15, represented by the multi-dimensional probability distributions).

As per claim 6, Murad et al discloses:

Wherein similarity measures are defined and computed on the patterns extracted from the behavior profiles, (Col. 9, lines 39-44, represented by the cumulative distribution of behavior profiles).

As per claim 7, Murad et al discloses:

Wherein the computer program is further operative to compare the data cubes with similarity measures identifying fraud so as to extract fraud detection from the behavior profiles, (Col. 8, lines 10-15, represented by comparing the threshold value to determine if the daily profile is fraudulent or unusual).

As per claim 9, Murad et al discloses:

Wherein the behavior profiles are analyzed to detect caller fraud, (Col. 10, lines 30-39, represented by the comparison of the behavior profiles to identify a deviation from the normal behavior where the deviation is designated as fraudulent).

As per claim 10, Murad et al discloses:

Wherein the customer records comprise customer call records, the profiling engine builds and updates customer calling behavior profiles by mining the customer call records, and at the computer program derives similarity measures on patterns extracted from the call behavior profiles, (Col. 3, lines 25-32, where the customer records are represented by the customer call records, Col. 6, lines 55-61, where the building and updating of customer calling records is represented by the update of the clusters of daily profiles, Col. 10, lines 24-36, where the derivation of similarity measures is represented by the comparison to identify a deviation from normal behavior profiles).

As per claim 11 Murad et al discloses:

A profiling engine configured to communicate with the data warehouse and operative to generate customer telephone calling behavior profiles from the customer

record within the data warehouse, the profiling engine being configured to define customer telephone calling behavior profiles using probability distributors, (Col. 11, lines 26-35, represented by the means for obtaining a plurality of first behavior profiles), on multi-dimensional and multi-level data cubes, one multi-level data cube being a profile cube (Col. 6, lines 55-59 represented by the daily profile), another multi-level data cube being a profile-snapshot cube, (Col. 6, line 62-Col. 7, line 2, represented by the daily prototype referred to as the second level profile processing), and yet another data cube being a profile cube formed by merging together the profile cube and the profile-snapshot cube, (Col. 7, lines 3-17, represented by the third level overall profile);

And a computer application program implemented on the profiling engine and operative to represent behavior profiles as patterns, using the telephone call data, and derive similarity measures of the patterns usable to profile customer behavior and detect fraud, (Col. 8, lines 61-66 w/ Col. 10, lines 30-39, where the computer application program is represented by the computer implemented method and the similarity measures are represented by the deviation from the normal behavior profile)

Murad et al fails to disclose the following, however McDonough et al discloses:  
and to compute the customer telephone-calling behavior profiles using OLAP operations, (Col. 11, lines 29-34 and Col. 12, lines 50-53, where the statistics represent the customer calling behavior profiles).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to incorporate OLAP into the Murad et al patent with the motivation of accurately analyzing trends in a telecommunications environment.

As per claim 16, Murad et al discloses:

Wherein the updated profile cube is stored within a profile table of the data warehouse such that subsequent customer profiling utilizes customer records from the data warehouse comprising the updated profile cube, (Fig. 2B, Col. 4, lines 41-45 w/ Col. 6, line 55-Col. 7, line 16, where the updated profile cube is represented by the call prototype).

As per claim 17, Murad et al discloses:

Providing call data in the form of call data records to a data warehouse, (Col. 4, lines 18-19, represented by the memory);

Generating a profile-snapshot cube accommodating multiple customers;(Col. 10, lines 24-25, represented by the first behavior profile for each cluster)

In combination with generating the profile-snapshot cube, generating a profile cube for the same set of customers from the data warehouse, (Col. 10, lines 26-37, where the data warehouse is shown by the arrangement of the records);

Updating the profile cube by merging the profile cube with the profile-snapshot cube, (Col. 7, lines 3-17, represented by the third level overall profile);

Storing the updated profile cube in the data warehouse, (Col.8-19, represented by the entry in the overall profile vector);

Murad et al fails to disclose the following, however, the following is obvious with McDonough since McDonough teaches that an OLAP tool is used to analyze trends and statistics for operational management of the environment (See Col. 11, lines 29-33). In this type of situation, an OLAP server is necessary to provide the services of accessing



the proper trend files and routing these trend files to other computers in the network for analysis. Without the OLAP server, the OLAP tool would have no way of keeping the trend files in order to have proper analysis:

Loading the call data records into an OLAP server;

As per claim 18, Murad et al discloses:

Wherein the data warehouse comprises profile tables configured to store the profile cube, (Col. 4, lines 41-45, and Fig. 2B, where the profile cube is represented by each depicted square)

As per claim 19, Murad et al discloses:

Wherein the updated profile cube is subdivided into a plurality of individual calling pattern cubes, each representative of individual customers, Col. 4, lines 41-45, where each depicted square represents a call prototype/profile where each call is made by a customer).

As per claim 20, Murad et al discloses:

Further comprising the step of performing at least one of reporting, analyzing, and visualizing of one of the calling pattern cubes for an individual customer, (Col. 10, lines 30-38, esp. lines 33-39, where determining the difference represents the analyzing step).

### ***Response to Arguments***

5. The new declaration submitted by the applicant has been reviewed by the examiner. The objection to the declaration given in the previous rejection has been withdrawn.

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6. Applicant's arguments with respect to claims 1, 3-7, 9-11, and 16-20 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akiba K Robinson-Boyce whose telephone number is 703-305-1340. The examiner can normally be reached on Monday-Friday, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on 703-305-9643. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7238 [After final communications, labeled "Box AF"], 703-746-7239 [Official Communications], and 703-746-7150 [Informal/Draft Communications, labeled "PROPOSED" or "DRAFT"].

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.



A. R. B.  
March 18, 2003



**TARIQ R. HAFIZ**  
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